

Appln. No.: 10/663,028
Amendment Dated April 23, 2007
Reply to Office Action of December 26, 2006

SDC-103US

RECEIVED
CENTRAL FAX CENTER

APR 23 2007

Remarks/Arguments:

Claims 1, 10, 11 and 21 have been amended. No new matter is introduced herein.
Claims 2 and 22 have been canceled. Claim 1, 3-21 and 23-25 are pending.

Claims 1 and 21 have been amended to include the features of respective claims 2 and 22. Claims 2 and 22 have been canceled. Claims 1 and 21 have also been amended to clarify that the preferred direction is of the multiple directions. Basis for the amendment can be found, for example, at paragraphs [0014]; [0031]; [0063]; [0066]; and Figs. 1 and 8. Claims 10 and 11 have been amended to correct a typographical error in the description of the respective equations.

Claims 1, 2, 14, 21, and 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. (U.S. 2004/0053634) in view of Chien (U.S. Pat. No. 6,807,227). Claims 2 and 22 are canceled. It respectfully submitted that, for the remaining claims, this rejection is overcome for the reasons set forth below.

In particular, neither Gainey et al., Chien nor their combination disclose or suggest:

...determining information concerning respective frequency spectra of the RF signal received from each of the multiple directions...

...determining information concerning respective signal strengths of the RF signal received from each of the multiple directions...

...analyzing the determined information concerning the respective signal strengths and the information concerning the respective frequency spectra of the RF signals to select a preferred direction of the multiple directions from which to receive the RF signal...

as required by claim 1 or

...a power spectrum measurement processor which determines information concerning respective frequency spectra of the RF signal received from each of the multiple directions...

...an automatic gain control circuit which provides respective measures of signal strength for the RF signal received from each of the multiple corresponding directions...

...a processor which analyzes the determined information and the measures of signal strength to select a preferred direction of the multiple corresponding directions from which to receive the RF signal...

Appln. No.: 10/663,028
Amendment Dated April 23, 2007
Reply to Office Action of December 26, 2006

SDC-103US

as required by claim 21.

Gainey et al. disclose, in Figs. 7 and 8, methods for identifying a best angle setting for a directional antenna to communicate with a base station, for performance in both forward and reverse links (paragraph [0048]). As shown in Fig. 8, angle settings of a directional antenna are ranked and selected based on a combination of the received power of a pilot signal and a metric, E_s/N_0 , as a function of noise, of a channel associated with the pilot signal (paragraphs [0049] and [0053-0054]). As acknowledged by the Examiner, Gainey et al. do not disclose or suggest determining information concerning respective frequency spectra of the RF signal received from each of the multiple directions, as recited in claims 1 and 21. In addition, Gainey et al. do not disclose or suggest analyzing the signal strength information and the frequency spectra information to select a preferred direction of the multiple directions from which to receive the RF signal, as recited in claims 1 and 21. Thus, Gainey et al. do not include all of the features of claims 1 and 21.

Chien discloses, in Fig. 2, estimation of channel characteristics based on current conditions of a communication channel and, based on the estimates of the channel impulse response, setting parameters to mitigate frequency-selective fading. Chien also discloses that a signal-to-noise ratio (SNR) and a signal-to-interference ratio (SIR) are estimated to set additional parameters to mitigate interference and/or time selective fading (Col. 4, lines 9-36 and Col. 10, lines 30-50). Chien does not disclose or suggest determining information concerning respective frequency spectra of the RF signal received from each of the multiple directions, as recited in claims 1 or 21 (emphasis added). Chien, instead, estimates a frequency response characteristic of the channel. In addition, Chien does not disclose or suggest analyzing the signal strength information and the frequency spectra information to select a preferred direction of the multiple directions from which to receive the RF signal, as recited in claims 1 and 21 (emphasis added). Chien, instead, discloses using the channel impulse response to mitigate frequency selective fading. In addition, Chien discloses that the channel impulse response provides an estimation of a multipath profile in a channel, to determine a number of fingers of a Rake receiver (Col. 7, lines 42-46). Because Chien use a Rake receiver, Chien desires to receive a signal having a large multipath profile. As set forth in the subject specification at paragraphs [0003] and [0014], multipath distortion can affect the frequency spectrum of a signal. The subject invention as defined by claim 1, adjusts the antenna direction, based on the measured frequency spectra to maximize the spectrum of the

Appln. No.: 10/663,028
Amendment Dated April 23, 2007
Reply to Office Action of December 26, 2006

SDC-103US

received signal. Consequently, as taught in paragraphs [0003] and [0014], this signal would have reduced multipath components, not maximum total signal strength among the direct and multipath components as taught by Chien. Thus, Chien does not provide the feature of claims 1 and 21 which is missing from Gainey et al.

Because neither Gainey et al., Chien, nor their combination disclose or suggest all of the limitations of claims 1 and 21, claims 1 and 21 are not subject to rejection under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. in view of Chien and claim 14, which depends from respective claim 1, is also not subject to rejection under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. in view of Chien.

Claims 4, 5, 23 and 24 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. and Chien, further in view of Gosse et al. (U.S. Pat. No. 6,690,723). These claims, however, include all of the features of respective claims 1 and 21 from which they depend and are patentable over Gainey et al. and Chien for at least the same reasons as respective claims 1 and 21.

Gosse et al. disclose, in Fig. 1, a reduced state sequence estimator (RSSE) decision feedback equalizer (DFE) that includes a branch metrics calculator 20. Branch metrics calculator 20 provides branch metrics associated with state transitions, based on the Euclidean distance between an equalized signal and coset-sliced symbols (Col. 3, lines 53-57 and Col. 4, lines 7-10). Gosse et al. do not supply the deficiencies of Gainey et al. and Chien because they do not disclose or suggest 1) determining information concerning respective frequency spectra of an RF signal received from each of multiple directions or 2) analyzing the signal strength information and the frequency spectra information to select a preferred direction of the multiple directions from which to receive the RF signal, as required by respective claims 1 and 21. Gosse et al. are silent regarding these features. Thus, Gosse et al. do not disclose or suggest all of the features of respective claims 1 and 21.

The cited art, taken singularly or in combination, do not disclose or suggest all of the limitations of claims 1 and 21. Accordingly, claims 4, 5, 23 and 24 which include all of the features of respective claims 1 and 21 from which they depend, are also not subject to rejection under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. and Chien, further in view of Gosse et al.

Appln. No.: 10/663,028
Amendment Dated April 23, 2007
Reply to Office Action of December 26, 2006

SDC-103US

Claims 8, 9, and 25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. and Chien, further in view of Kadous et al. (U.S. 2003/0095508). These claims, however, include all of the features of respective claims 1 and 21 from which they depend and are patentable over Gainey et al. and Chien for at least the same reasons as respective claims 1 and 21.

Kadous et al. disclose a post-detection SNR metric for a multipath channel by a single carrier system after equalization and that an equalizer to process a received signal in a single carrier system may include a minimum mean square error linear equalizer (MMSE-LE) or a decision feedback equalizer (DFE) (paragraph [0072]). Kadous et al. do not make up for the deficiencies of Gainey et al. and Chien because they do not disclose or suggest 1) determining information concerning respective frequency spectra of an RF signal received from each of multiple directions or 2) analyzing the signal strength information and the frequency spectra information to select a preferred direction of the multiple directions from which to receive the RF signal, as required by respective claims 1 and 21. Kadous et al. are silent regarding these features. Thus, Kadous et al. do not disclose or suggest all of the features of respective claims 1 and 21.

The cited art, taken singularly or in combination, do not disclose or suggest all of the limitations of respective claims 1 and 21. Accordingly, claims 8, 9, and 25, which include all of the features of respective claims 1 and 21 from which they depend, are also not subject to rejection under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. and Chien, further in view of Kadous et al.

Claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. and Chien, further in view of Johnston (U.S. Pat. No. 6,466,912). This claim, however, includes all of the features of claim 1 from which it depends and is patentable over Gainey et al. and Chien for at least the same reasons as claim 1.

Johnston discloses a perceptual coding technique for audio signals including a spectral flatness measure (Col. 1, lines 34-45). Applicants note that Johnston is not analogous art. Audio signals can not be detected by an antenna. Accordingly, Johnston, which discloses a perceptual coding technique for audio signals, is not in the same technical field and does not relate to the same problems as the subject invention as defined by claim 1, which is directed to

Appln. No.: 10/663,028
Amendment Dated April 23, 2007
Reply to Office Action of December 26, 2006

SDC-103US

controlling a directional antenna to receive an RF signal. Johnston does not supply the deficiencies of Gainey et al. and Chien because it does not disclose or suggest 1) determining information concerning respective frequency spectra of an RF signal received from each of multiple directions or 2) analyzing the signal strength information and the frequency spectra information to select a preferred direction of the multiple directions from which to receive the RF signal, as required by claim 1. Johnston is silent regarding these features. Thus, Johnston does not disclose or suggest all the features of claim 1.

The cited art, taken singularly or in combination, do not disclose or suggest all of the limitations of claim 1. Accordingly, claim 12, which includes all of the features of claim 1 from which it depends, is also not subject to rejection under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. and Chien, further in view of Johnston.

Claims 16, 17, 19 and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. and Chien, in view of Kolinko et al. (U.S. 2002/0165002). This ground for rejection is respectively traversed for the reasons set forth below.

In particular, neither Gainey et al., Chien, Kolinko et al. nor their combination disclose or suggest:

...measuring at least a first characteristic of the RF signal received from each of the multiple directions...

...selecting one of the multiple directions responsive to the measured first characteristic to define a selected direction...

...measuring at least a second characteristic, different from the first characteristic, of the RF signal received from each of the further directions to select a preferred direction from which to receive the RF signal...

as required by claim 16.

Gainey et al. and Chien are discussed above. As acknowledged by the Examiner, neither Gainey et al. nor Chien disclose or suggest measuring at least a first characteristic of the RF signal and measuring at least a second characteristic of the RF signal, as recited in claim 16. Kolinko et al. disclose providing a coarse positioning of a high-gain antenna by using a visual sight and a fine adjustment, with a remote transmitter turned on, by using a power meter connected to the receiver (paragraph [0042]). Kolinko et al. do not make up for the deficiencies of Gainey et al. and Chien because they do not disclose or suggest measuring at

Appln. No.: 10/663,028
Amendment Dated April 23, 2007
Reply to Office Action of December 26, 2006

SDC-103US

least a first characteristic of the RF signal and measuring at least a second characteristic of the RF signal, as recited in claim 16 (emphasis added). Kolinko et al., instead, disclose coarse pointing of the high-gain antenna by a visual inspection and thus do not measure first and second characteristics of the RF signal. Thus, Kolinko et al. do not include all of the features of claim 16.

Because neither Gainey et al., Chien, Kolinko et al. nor their combination disclose or suggest all of the limitations of claims 16, claim 16 is not subject to rejection under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. and Chien, in view of Kolinko et al. and claims 17, 19, and 20, which depend from claim 16, are not subject to rejection under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. and Chien, in view of Kolinko et al.

Claim 18 was rejected under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. and Chien, in view of Kolinko et al., further in view of Kadous et al. Claim 18, however, includes all of the features of claim 16 from which it depends and is patentable over Gainey et al., Chien, and Kolinko et al. for at least the same reasons as 16. The Kadous et al. patent is discussed above and does not make up for the deficiencies for Gainey et al., Chien and Kolinko because it does not disclose or suggest measuring a first characteristic of the RF signal to select one of the multiple directions and measuring a second characteristic of the RF signal to select a preferred direction from which to receive the RF signal. Thus, Kadous et al. do not disclose or suggest the features of claim 16 which are missing from Gainey et al. and Chien.

The cited art, taken singularly or in combination, do not disclose or suggest all of the limitations of claim 16. Accordingly, claim 18, which includes all of the features of 16 from which it depends, is also not subject to rejection under 35 U.S.C. §103(a) as being unpatentable over Gainey et al. and Chien, in view of Kolinko et al., further in view Kadous et al.

Applicants acknowledge with appreciation the Examiner's finding that claims 3, 6, 7, 10, 11, 13 and 15 would be allowable if rewritten in independent form including all of the limitations of the base claim and intervening claims. Applicants have not amended these claims into independent form because it is submitted that the base claim is allowable for the reasons set forth above.

Appln. No.: 10/663,028
Amendment Dated April 23, 2007
Reply to Office Action of December 26, 2006

SDC-103US

In view of the forgoing amendments and remarks, Applicants request that the Examiner reconsider and withdraw the rejection of claims 1, 2, 4, 5, 8, 9, 12, 14 and 16-25 and the objection to claims 3, 6, 7, 10, 11, 13 and 15.

Respectfully submitted,



Kenneth N. Nigon, Reg. No. 31,549
Attorneys for Applicants

KNN/snp/pb

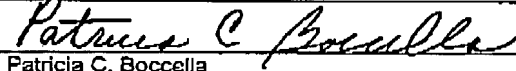
Dated: April 23, 2007

P.O. Box 980
Valley Forge, PA 19482
(610) 407-0700

The Director is hereby authorized to charge or credit Deposit Account No. 18-0350 for any additional fees, or any underpayment or credit for overpayment in connection herewith.

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office (571-273-8300) on the date shown below.

April 23, 2007



Patricia C. Boccella

SNP_H:\NRPORTBL\RP\SNPEREZ\131095_1.DOC